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THE AMERICAN INSTITUTE OF CHEMISTS
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233 Broadway
New York, N. Y.

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The American Institute of Chemists Offers Its Services to the United States Government During the War Emergency

A letter was sent to the President offering the services of the Institute to our country during the present War emergency. This letter and the reply received from the National Defense Research Committee are printed below.

To the President of the United States

The National Council of THE AMERICAN INSTITUTE OF CHEMISTS has directed me to advise you that THE AMERICAN INSTITUTE OF CHEMISTS, as a body and its members individually, offer their services and abilities to the United States Government in any matters which may be of value to the country under present war conditions.

THE AMERICAN INSTITUTE OF CHEMISTS is an organization whose activities are directed to the professional and economic betterment of chemists, and its membership is limited to American citizens. Its qualifications for membership are higher than any other similar organization in this country, and hence the INSTITUTE and its members may be of valuable assistance in furthering the interests of the country. I enclose, herewith, the roster of members of THE AMERICAN INSTITUTE OF CHEMISTS, which is indicative of their scientific ability, and I also enclose a pamphlet outlining the INSTITUTE's objectives.

Again assuring you that the INSTITUTE and its members are placing themselves at your disposal, I am,

Respectfully yours,

H. S. Neiman, *Secretary*

Office for Emergency Management

NATIONAL DEFENSE RESEARCH COMMITTEE

of the

Office of Scientific Research and Development

1530 P Street NW

Washington, D. C.

Mr. Howard S. Neiman
233 Broadway
New York, N. Y.

Dear Mr. Neiman:

Your letter of December 31, 1941, addressed to President Roosevelt, has been referred to a number of individuals in the government service, among whom I happen to be one. As Chairman of Division B, the chemical division of the National Defense Research Committee, I am writing to express my appreciation of the offer of the services of THE AMERICAN INSTITUTE OF CHEMISTS. I have looked through your roster and find that at the present time there are several of your members who are associated with the National Defense Research Committee, others with the Medical Research Committee, and a long list who are key executives in industries filling substantial and important defense orders from the government.

You are probably acquainted with the fact that the National Defense Research Committee is limited in scope to a study of strictly military problems of the Army and Navy. For the most part, these problems have been submitted to us by the military forces and involve sometimes entirely new problems which have been previously studied but not yet brought to completion. Just at present there is no organization in the government which is studying substitute processes, substitutes, surpluses, etc. I hope and expect that very shortly an organization for this purpose will be created and that funds for research will be provided. This would greatly expand the investigations which should be undertaken and I am sure that many of your members will be called upon to help.

Sincerely yours,
Roger Adams, *Chairman*
Division B

Dollars From Cranberry Waste

By **Ralph K. Carleton, F.A.I.C., William N. Morris[+], and Walter A. Nealy***

Rhode Island State College, Kingston, Rhode Island

How chemists converted a waste product into a million dollar asset.

AN example of conservation resulting from a recent industrial development is the production of several important by-products from cranberry skins. Through the development of these by-products another million dollars may be added to the value of the cranberry crop of the United States. Little did the growers and canners of cranberries realize a year or two ago that in a short space of time they would be reaping dollars from the wax on the surface of the skins and from the oil in the pits of the seeds. For many years, thousands of pounds of cranberries not suitable to ship as fresh fruit have been thrown away and a vast amount of cranberry pulp, a waste product produced in manufacturing strained cranberry sauce or jelly, also found its way to the dump.

While it had been reported by Sando[1] in 1934 that cranberry skins contained ursolic acid, yet it was not until the latter part of 1939 that the Research Department of Cranberry Canners, Inc., began the recovery of ursolic acid from cranberry waste. The object of this investigation was to produce a sufficient amount of this rare product for the study of its properties, and to determine whether or not it was practical to produce it on a commercial scale. The skins of cranberries have a wax-like coating on the outside which gives them a glossy appearance, and which serves as a protection from water and insect pests. This coating is a rather complex substance having a high melting point, so high in fact, that very little if any of it is removed when cranberries are boiled. This coating is made up of a waxy material, and a small amount of another water-

*Director of Research, Cranberry Canners, Inc., South Hanson, Massachusetts.
+Present address: Department of Chemistry, Washington University, St. Louis, Missouri.

insoluble substance known as ursolic acid. This acid may be obtained in small amounts from other plant material, but the skins of cranberries have been found to be a fairly rich source of supply. The seeds from cranberries too, like many other seeds, have a soft white meat in them which contains oil. This oil possesses an appreciable viscosity and is green in color. Its odor resembles that of cottonseed oil. While it is a rather high boiling oil, an important characteristic of the oil is that it possesses 200 units of Vitamin A per gram[2]. It should be mentioned too that preliminary studies show that it is possible, by grinding dried cranberry skins to a 200 mesh and subsequently mixing the powder with an appropriate "binder", to produce a plastic which can be used for moulding purposes. Moreover, this product may receive consideration at a later date as a substitute for cork, the supply of which is being seriously curtailed by the present emergency.

Production of By-Products

At present ursolic acid is being produced at the rate of about two pounds a day in a pilot plant. The process is one of extraction, utilizing different solvents for specific extraction purposes. It has been found that several different organic solvents, including hexane, C_6H_{14}, dichlor-ethylene, $C_2H_2Cl_2$, alcohol, C_2H_5OH as well as benzene, C_6H_6, are suitable for extraction purposes. However, these are by no means all the solvents that might be employed for this purpose. Twenty-five pounds of dried cranberry skins are placed in a copper cylinder. Through this is passed the vapor of one of the solvent fluids for a period of time and at a definite temperature. It has been found that a twelve hour contact period is most effective for the extraction of either wax or acid from the skins. After one of the extracting solvents has been in contact with the skins for the desired length of time, that liquid flow is stopped and the second solvent permitted to contact the skins for an equal period of time. The action of the solvents is specific in that hexane will extract the wax from the skins but will not remove more than traces of the acid. Utilizing the same skins and treating them subsequently with dichlorethylene, practically all the acid may be removed. An average yield of each of these products amounts to between ten and twelve per cent. In some of the experimental work carried on at Rhode Island State College, a small amount of a solid white hydrocarbon has been isolated along with the wax. This has been determined by analysis to be nonocosane, $C_{29}H_{60}$. The cranberry

seed oil may be obtained either by expressing it from the seeds or by an extraction process. The latter process is desirable, since the seeds must be ground before the oil can be expressed from the seeds, and hence the oil will then be contaminated with bits of the seed shells which are somewhat difficult to separate. When the oil is obtained by extraction the yield amounts to about twenty per cent. The wax is readily obtained as a shiny green solid upon evaporation and recovery of the solvent in which it is extracted from the skins. The raw wax is termed "Ursolene" and melts at about 80°C. (176°F.). Up to the present time eleven different by-products have been recovered from cranberry waste, six of which have a recognized commercial value.

Characteristics of By-Products

Ursolic acid is a very fine and fluffy white powder requiring a space of about 231 cubic inches to hold a pound. It possesses no taste or odor, and is insoluble in water, hot or cold. It is soluble in alcohol however, and to a greater or less extent in other organic solvents. One per cent of the acid in ammonia produces a thick colloidal suspension. While the acid in the crude state is a greenish-yellow powder, resinous to the touch and strongly water-repellant, it nevertheless can be readily purified by the method of Drake and Duvall[3] to an impalpable white powder. According to Winterstein and Stein[4] the acid in the form of a saturated solution of its sodium salt is toxic to fish. This reported toxicity to fish might be due to the use of a saturated solution or possibly to still other factors. Since ursolic acid is being introduced as an emulsifying agent in pharmaceutical and food preparations, studies have been carried out by Lubitz and Fellers[5] to investigate the matter of toxicity. From the results of their studies, these investigators conclude that, ursolic acid is non-toxic to rats, guinea pigs, chickens, rabbits and humans.

From a chemical viewpoint, ursolic acid is a monohydroxytriterpene acid of which the formula is $C_{30}H_{48}O_3$. One of the early formulas assigned to the acid was $C_{31}H_{50}O_3$ which was suggested by Van der Haar[7] in 1924. However, in 1931 this formula was shown by Sando to be incorrect and the formula above agreed upon as the correct one. This was the result of ninety-two combustions made by the investigator in the course of the study. An outstanding property of ursolic acid is its ability to produce stable emulsions from combinations of oils and water. It produces a water-in-oil emulsion instead of the usual oil-in-water type, the droplets of water being suspended in the oil instead of

the oil in the water. For this reason the continued addition of water, up to a certain point, results in a continued thickening of the emulsion, whereas the addition of oil will lower the viscosity of the emulsion materially. As small an amount of ursolic acid as three parts to one thousand parts of ingredients will produce a smooth, firm emulsion that will stand up without any support. If the quantity of acid is increased the time required for complete emulsification is greatly decreased. For example, 10 grams of the powdered acid added to a mixture of 100 cc. of corn oil and 400 cc. of distilled water and stirred, will completely emulsify into a white solid in 55 seconds.

The cranberry skin wax should have a high commercial value because of its hardness, and its very high melting point. The raw wax termed "Ursolene" has a dark green color and is somewhat shiny in appearance. As previously mentioned it has a melting point of 80°C. (176°F.). When heated to about 240C. for several hours and air passed through the melted wax continuously during that time, a polymeric change takes place, presumably due to oxidation. The wax becomes dark brown, almost black in color and looks not unlike Montan wax. It can be molded readily, but shows extreme brittleness. The melting point of the polymeric wax is between 190°C. — 194°C. (374°F. — 381.2°F.).

A cream called "Vaccinol" has been prepared from the cranberry seed oil, ursolic acid and water. This cream salve has proved very valuable in the treatment of burns and various skin infections. It appears to remove the soreness accompanying the burn or skin irritation, resulting in rapid healing of the affected area. The early samples of this salve showed a tendency to separate out water upon standing, since its major component is water. However, a method was developed subsequently for stabilizing the emulsion and thus preventing the squeezing out of water.

Industrial Importance of the Acid and Its Derivatives

Aside from the fact that ursolic acid is an especially good emulsifying agent, hence its potential use in cosmetics, it should be noted that there are other possible uses to which it might well be put. It has been found to put more gloss on cellulose lacquers, and to slow the drying time of lacquers. The aluminum salt of the acid has a noticeable waterproofing effect upon paper as well as upon fabrics, woods and metal surfaces.

In foodstuffs as well, the acid is of significance. Aside from its strong emulsifying properties, since it is edible and non-toxic it offers

a market for the use of apple pomace, which is one potential source of the acid. In the field of essential oil manufacture, not only is its emulsifying property important, but because it affords an opportunity for the use of a by-product of the clove-bud and a clove waste distillation at the still head. This by-product is oleanolic acid which was originally obtained from the skins and waste of cherries and from grape skins[8].

The foregoing indicates the possibilities that lie ahead in the development of uses to which valuable chemical products can be put. There is little doubt but that as time passes the chemist and the biologist as well will turn his attention more and more to the utilization of many natural substances and waste products which heretofore have been pretty much neglected. This is especially significant when one realizes how many of the drugs and chemicals formerly obtained from foreign sources are almost impossible to obtain nowadays, due to the present world situation.

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Chemistry in 1500 B.C.

The twenty-fifth chapter of Exodus, we are reminded by Dr. John T. Chappell, establishes the fact that chemistry was not unknown in the days of Moses. "And the Lord spake unto Moses, saying, 'Speak unto the children of Israel, that they bring Me an offering with a willing heart, of gold, silver, and brass, and blue, and purple, and scarlet, and fine linen and goats' hair, and rams' skins dyed red, and badgers' skins, and shittim wood, and oil for light, and spices for annointing oil, and sweet incense, and onyx stones, and stones set in the ephod and breast plate.'"

The Research Viewpoint (Gustavus J. Esselen, Inc.)

Emil Schlichting

THE AMERICAN INSTITUTE OF CHEMISTS regretfully announces the death of its member, Emil Schlichting, on December 28, 1941. Mr. Schlichting was prominent in the field of chemistry as president and director of the National Brewers Academy and Consulting Bureau of New York.

Emil Schlichting was born in Germany in 1874 and came to this country in 1891. He obtained the Ph.G. from the Columbia University College of Pharmacy, in 1894, and a degree as Food Chemist from the University of Munich in 1899.

Previous to becoming affiliated with the National Brewers Academy and Consulting Bureau in 1907, Mr. Schlichting worked for various food laboratories as a chemist and for the U. S. Department of Agriculture in the same capacity.

Among the articles which Mr. Schlichting contributed to technical journals were, "Contributions on Brewing", "Adulteration of Foods" and "Yeasts". He was a general expert on the food and fermentation industries and he specialized in the analysis of foods and beverages.

Mr. Schlichting was a member of several scientific organizations including The Society of Chemical Industry, The Chemists' Club, The British Institute of Brewing, and he was also an honorary member of the Master Brewers Association of America. He became a member of THE AMERICAN INSTITUTE OF CHEMISTS in 1923.

Wilhelm Segerblom

THE AMERICAN INSTITUTE OF CHEMISTS regrets to announce the death of Wilhelm Segerblom on November ninth.

Wilhelm Segerblom was a prominent member of the faculty of Phillips Exeter Academy, Exeter, New Hampshire, having been associated with that Institute's department of Chemistry for thirty-eight years. He was born in Sweden in 1872 and was naturalized as an American citizen in 1893.

He obtained his elementary and high school education in Exeter. He then attended The Phillips Exeter Academy, The Massachusetts Institute of Technology, and Harvard University, from which he obtained the B.A. degree in 1897.

Professor Segerblom did some work on abstracting Swedish scientific

periodicals for *Chemical Abstracts* before he became an instructor in chemistry, and later head of this department, at the Exeter Academy. Here he remained from 1899 until his retirement in 1937. Meanwhile, he built up a chemical collection of several thousand specimens illustrating the scientific classification of chemical elements and compounds, accompanied by numerous exhibits illustrating the application of chemistry to the arts and manufactures. In addition to his duties at Exeter, Professor Segerblom also supervised a course on the teaching of chemists at Pennsylvania State College.

Among the numerous publications contributed by him were various pamphlets, committee reports and articles in scientific periodicals, and three books: "First Year Chemistry", "Manual of Qualitative Analysis" and "Properties of Inorganic Substances".

The American Chemical Society, The American Association for the Advancement of Science, The New England Association of Chemistry Teachers, and the National Educational Association, were some of the various societies to which Mr. Segerblom belonged. He became a member of THE AMERICAN INSTITUTE OF CHEMISTS in 1936.

Frank Julian Andress

THE AMERICAN INSTITUTE OF CHEMISTS records with deep regret the death of Frank Julian Andress. Dr. Andress was professor of biochemistry and preventive medicine at the Eclectic College of Medicine, Cincinnati, Ohio, from 1934 until this College graduated its last class in 1939.

Professor Andress was born on November 15, 1889 in Cincinnati, Ohio. Here he attended elementary and High Schools as well as the Ohio Mechanics Institute. Additional education was obtained at the Yale Army Laboratory School, and the University of Cincinnati. From the latter institute he obtained the A.B. in 1928, the M.Sc. in 1931, and the Ph.D. in 1934.

From 1912 to 1915, Dr. Andress was assistant chemist and bacteriologist for the Cincinnati Water Works. He was an instructor in chemistry at the Ohio Mechanics Institute in 1916, and a U. S. Army Sergeant 1st class, in clinical and sanitary laboratory work in 1917, 1918, and 1919. From 1920 to 1921, he was President of The Andress-Mitchell Chemical Company, and during 1921-1934, an instructor in

preventive medicine at The University of Cincinnati.

Professor Andress specialized in the fields of chemistry and bacteriology of food preservation, and was a consultant to various organizations in Ohio. He also specialized in the design and construction of pasteurising equipment.

During his lifetime, Dr. Andress obtained several patents on various processes related to improvements in the production and manufacture of food. He also was a regular contributor to the *Chemist-Analyst* which published several of his chemical articles.

Dr. Andress was a member of Sigma Xi and the American Chemical Society. He became a member of THE AMERICAN INSTITUTE OF CHEMISTS in 1935.

Alexander Lowy

THE AMERICAN INSTITUTE OF CHEMISTS regrets to announce the death of Alexander Lowy, on December 25, 1941, after an illness of four months.

He was born in New York City on March 31, 1889, and he obtained the B.S. degree from Columbia University in 1911, the M.A. degree in 1912, and the Ph.D. degree in 1915.

During 1912 to 1915, Dr. Lowy was assistant in electrochemistry at Columbia University. From 1915 to 1918 he taught in New York City high schools, and then became associated with the University of Pittsburgh where he remained until his death.

Professor Lowy was not only a holder of many U. S. patents, particularly in the field of protective chemicals, but he was a pioneer in electro-organic chemistry. He was the author of over seventy research reports and scientific papers which have appeared in technical journals since 1919. Among his more famous works is "A Textbook of Organic Chemistry", which he co-authored with Benjamin Harrow, and which is now in use in colleges and universities throughout America.

Dr. Lowy was a member and past president of the Pittsburgh Section of the American Chemical Society; a member, past-vice president and chairman of the committee on publicity of the Electrochemical Society, and a member of THE AMERICAN INSTITUTE OF CHEMISTS since 1937.

COUNCIL

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November Meeting

The 184th meeting of the National Council of The American Institute of Chemists was held on Tuesday, November 18, 1941, at The Chemists' Club, 52 East 41st Street, New York, N. Y., at 6:30 p.m.

Dr. Harry L. Fisher presided. The following officers and councilors were present: Messrs: E. R. Allen, E. R. Bridgwater, S. R. Brinkley, F. G. Breyer, H. L. Fisher, C. N. Frey, M. L. Hamlin, R. J. Moore, J. M. McIlvain (representing Pennsylvania Chapter), W. J. Murphy, H. S. Neiman, W. T. Read, M. Toch, and W. D. Turner. Mr. M. R. Bhagwat, Dr. W. H. Gardner, Dr. D. Price, and Miss V. F. Kimball were present.

Upon motion made and seconded, the minutes of the previous meeting were approved.

The Treasurer's report, showing total cash and bonds on hand of $5540.40, with bills payable of $163.30, was read and accepted.

Upon motion made and seconded, the date of the next meeting of the Council was set for Friday, December 12, 1941, at five p.m., immediately preceding the dinner to be given in honor of President Fisher.

Dr. Gardner reported for the Committee on Professional Status, to the effect that meetings of the committee had been held at which the problems which face the profession were discussed. Many of these, such as the definition of chemist, licensing, employment, and contracts, should also have

the coöperation of other societies for prompt solution. After discussion of various solutions for these professional problems, the Committee was asked to report further at the next meeting of the Council.

The continuation of the professional activities of Chemist Advisory Council was discussed, and upon motion made and seconded, $400 was appropriated for the use of this Council, if required during the period of the next three months.

The Committee on Professional Status and the Committee on Economic Status were requested to advise on the continuation of the work of Chemist Advisory Council, at the next meeting.

Dr. Fisher read a letter from Dr. Lundstrom concerning the advancement of the INSTITUTE.

There being no further business, adjournment was taken.

December Meeting

The 185th meeting of the National Council of THE AMERICAN INSTITUTE OF CHEMISTS was held on Friday, December 12, 1941, at The Chemists' Club, 52 East 41st Street, New York, N. Y., at 5:00 p.m.

Dr. Harry L. Fisher presided. The following officers and councilors were present: Messrs: E. R. Allen, F. G. Breyer, M. L. Crossley, H. L. Fisher, C. N. Frey, M. L. Hamlin, R. J. Moore, W. J. Murphy, H. S. Neiman, W. T. Read, F. D. Snell and M. Toch. Mr. M. R. Bhagwat, Dr. W. H. Gardner, Dr. D. Price, and Miss V. F. Kimball were present.

Upon motion made and seconded, the minutes of the previous meeting were approved.

The Treasurer's report, showing cash, bonds, and savings on hand of $4460.73, with bills payable of $175.24, was read and accepted.

Upon motion made and seconded, it was decided to publish the next roster of the Institute one year from date, and from then on to publish a roster once every two years.

Upon motion made and seconded, the Secretary was requested to prepare a resolution, offering the coöperation and services of THE AMERICAN INSTITUTE OF CHEMISTS to the President of the United States in this time of emergency, and copies of this resolution are to be sent to the Commander of the Chemical Warfare Service, to the Chairman of O. P. M., and to the chemical section of S.P.A.B.

Dr. Read reported as Chairman of the Committee on Membership to the effect that the Committee plans a new membership drive.

Dr. Gardner reported as Chairman of the Committee on Professional Status, and outlined the program for the Committee's activities.

The President of the INSTITUTE was requested to hold a committee meeting of representatives of other societies which are interested in licensing.

The Chemist Advisory Council was discussed and referred to the next meeting of the Council for more definite action.

It was decided to hold a special meeting of the National Council on Tuesday, January 6, 1942, to consider Chemist Advisory Council.

There being no further business, adjournment was taken.

Applications for Membership

Final action will be taken by the National Council, at its next meeting, on the following applications:

For Fellows

Casey, Robert S.
Director of Chemical Research, W. A. Sheaffer Pen Company, Fort Madison, Iowa.

Lynch, Kathryn Letterman
Research Chemist, American Cyanamid Company, Stamford, Conn.

McIntyre, Joseph Daniel
President, Dr. D. Jayne and Son, Inc., Delaware Avenue & Vine Street, Philadelphia, Penna.

Tonkin, William H.
Chemist, Standard Brands, Inc., 2655 West 19th Street, Chicago, Illinois.

Williams, Paul DeWitt
Laboratory Foreman, Western Sugar Refinery, San Francisco, California.

Yeck, Robert Pennington
Research Analytical Chemist, American Smelting and Refining Company, Research Department, Perth Amboy, New Jersey.

For Associates

Whitcomb, Gordon Putnam
Development of New Products, Calco Chemical Division of American Cyanamid Company, Bound Brook, N. J.

Schlenker, Henry Walter
Chemist, Woburn Degreasing Company of New Jersey, 1200 Harrison Avenue, Kearny, N. J.

For Junior

Williams, Dorothy Bradley
Junior Chemist, Hammond Paint and Chemical Company, Beacon, N. Y.

Application to be raised from Associate to Fellow

McBride, Edward Thomas
1st Lieutenant, Ordnance Department, U. S. Army, 1346 Social Security Building, Washington, D. C.

Application to be Raised from Junior to Associate

Butcosk, Arthur Frank
Test Department, Southern Railway System, Alexandria, Virginia.

CHAPTERS

New York

Chairman, Donald Price *Vice-chairman,* Elmore H. Northey
Secretary-treasurer, Milton Burton
New York University
New York, N. Y.
Council Representative, Marston L. Hamlin

New York Chapter Meetings

A meeting of the New York Chapter will be held at The Chemists' Club, 52 East 41st Street, New York, N. Y., on February thirteenth. The subject for discussion is "The Licensure of the Professional Chemist."

Other meetings of the New York Chapter will be held on April seventeenth and May twenty-second.

Niagara

Chairman, L. M. Lawton
Vice-Chairman, George W. Fiero
Secretary, Margaret C. Swisher
Department of Chemistry
University of Buffalo
Buffalo, New York
Council Representative, Arthur W. Burwell
Carl H. Rasch, *Alternate*

Pennsylvania

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Philadelphia, Penna.
Council Representative, Gilbert E. Seil
News Reporter to THE CHEMIST, Kenneth A. Shull

Washington

President, Ralph B. Deemer
Vice-president, L. F. Rader, Jr. *Treasurer,* L. R. Heiss
Secretary, Ernest J. Umberger
207 Albany Avenue, Takoma Park, Maryland
News Reporter to THE CHEMIST, T. H. Tremearne
Council Representative, Albin H. Warth

BOOKS

CHEMISTRY. A TEXTBOOK FOR COLLEGES. By William McPherson, William Edwards Henderson, W. Conrad Fernelius, and Edward Mack, Jr. *Ginn and Company.* 1940. 6" x 9". 762 pp. $3.75.

The first three authors are connected with the Ohio State University, and the fourth with Battelle Memorial Institute. They have collaborated to produce a text book designed to place particular emphasis on the particle nature of matter and to introduce a "great simplification in the treatment of atomic weights, . . . achieved by a preliminary approach through the positive ray method, which seems . . . . . to be a most worth-while innovation in teaching technique. Once the student has acquired a working knowledge of atomic weights, molecular weights, and simple formulas, he is far better prepared to understand the seemingly puzzling explanation of how the chemist deduces values for atomic weights."

The style of the book is unusually colorful and appealing to students who approach the subject of chemistry for the first time. The illustrations are abundant and well selected for interest. More organic chemistry than usual in beginning texts is included for the benefit of the large number of students who drop out of chemistry after one year, and who recognize in their daily lives an abundance of organic materials which interest them. This text contains forty chapters plus an appendix of pertinent information. Modern reading references follow each Chapter. The book should be particularly acceptable to students, who will appreciate its clear explanations and its easy-to-understand presentation.

ELEMENTARY MATHEMATICS FOR ENGINEERS. By Sir Ambrose Fleming. *Chemical Publishing Company, Inc.* First American Edition. 1941. 110 pp. 5½" x 8½". $2.00.

The objective of this book is to include in brief form just that portion of some ten departments of mathematics which the electrical engineering student will find necessary to solve elementary problems. Mathematical tables are included to facilitate numerical calculations. Two chapters are devoted to the practical applications of algebra; Chapter III to Plane Trigonometry; Chapter IV to Plane Coordinate Geometry; Chapter V to Vector Algebra; Chapter VI to Differential Calculus; Chapter VII to the Integral Calculus; Chapter VIII to Differential Equations; Chapter IX to Harmonic Analysis; Chapter X to Hyperbolic Trigonometry; and Chapter XI to Mathematical Tables.

The office of Civilian Defense recommends four of its publications to the chemist or chemical engineer: Textbook No. 1, "Protection against Gas"; Textbook No. 4, "First Aid in the Prevention and Treatment of Chemical Casualties"; Training Guide No. 15, "A Training Guide for Decontamination Squads"; and Handbook No. 6, "Handbook for Decontamination Squads", all of which may be ordered through the state council, office of Civilian Defense, or local offices of this agency. Information on the activities of this Council may be obtained from the Chief Chemical Warfare Service, Civilian Defense Division, Building F, D, and 23rd Streets, N.W., Washington, D. C.

CHEMISTS

Exposition of Chemical Industries

The eighteenth Exposition of Chemical Industries was held at Grand Central Palace, New York City, December first to December sixth, inclusive.

The Exposition of Chemical Industries is permanently organized and presented biennially as an educational institution and clearing-house of information for the chemical products, chemical process and chemically controlled industries.

The field of the eighteenth exposition covered practically the entire arena of normal industrial action, plus the enormous industrial expansion in explosives, as well as the sudden demand for other materials of war and supplies, created by the program of national defense. It comprised exhibits reflecting the rapid advance of chemical technology, raw materials, machinery and products in the following categories: Industrial chemicals, chemical products, processing materials, manufacturing ingredients, manufacturing equipment, machinery and supplies, process control, technology, containers, and plant construction.

Three floors of Grand Central Palace contained the exhibits of more than three-hundred industries, and their related by-products. Also, represented were some of the more specialized concerns and larger manufacturing units.

In attendance at the Exposition were a number of noteworthy chemists, scientists, chemical engineers, reseachers, plant managers, operating executives, business administrators, economists, educators, representatives of banking and investment interests, representatives of the Government and its organizations for national defense, and several other groups.

Professional and scientific societies were also represented. The booth of THE AMERICAN INSTITUTE OF CHEMISTS was attended by members of the New York Chapter, who registered many INSTITUTE members who attended the Exposition; and answered inquiries from those who desired information about the organization.

The Exposition was not open to the general public and admission was by invitation and registration at Grand Central Palace only.

The chairman was Dr. M. C. Whitaker, F.A.I.C., distinguished leader in the chemical industry, who has served in this capacity during several of the previous biennial events.

A meeting of the New York Branch of the American Pharmaceutical Association was held January 12, 1942, at Columbia University. Dr. H. van Zile Hyde, senior surgeon of the United States Public Health Service spoke on "The Pharmacist in Civilian Defense". Mr. Milton S. Malakoff, Editor of the *New York State Pharmacist*, spoke on "The New York State Association Pharmacy Defense Program."

Robert J. Moore, F.A.I.C., manager of the development laboratories of the Bakelite Corporation, Bloomfield, N. J., was elected as a member of the Corporation of Brooklyn Polytechnic Institute on November second.

1942 National Chemical Exposition

The dates of the 1942 National Chemical Exposition and the National Industrial Chemical Conference have been changed to November 17 to 22, 1942, at the Stevens Hotel, Chicago, according to an announcement by Victor Conquest, chairman of the Exposition Committee of the Chicago Section of the American Chemical Society. Associated with Mr. Conquest on the Exposition Committee are the following: W. M. Hinman, superintendant of the Sensitizing Department, Frederick Post Company; L. E. May, superintendent, Chemical Products, Sherwin-Williams Company; R. C. Newton, vice president, Swift and Company; H. E. Robinson, assistant chief chemist, Swift and Company; and G. L. Parkhurst, senior patent attorney, Standard Oil Company.

Presentation of Perkin Medal to Dr. Martin H. Ittner

The Perkin Medal for 1942 was presented January ninth to Dr. Martin H. Ittner, F.A.I.C., of the Colgate-Palmolive-Peet Company at a joint meeting of the American Section of the Society of Chemical Industry, the American Chemical Society, the American Institute of Chemical Engineers, the Electrochemical Society and the Société de Chimie Industrielle. Dr. Lincoln T. Work, F.A.I.C., presided. Mr. Sidney D. Kirkpatrick, Editor of *Chemical and Metallurgical Engineering*, spoke on the personal side of the medallist's life and Dr. Foster Dee Snell, F.A.I.C., President of Foster D. Snell, Inc., spoke on his technical accomplishments. The medal, which is awarded annually by the American Section of the Society of Chemical Industry for outstanding work in applied chemistry, was presented by Dr. Marston T. Bogert, F.A.I.C., following which Dr. Ittner gave an address on the subject "Forty-five years of Chemistry in a Soap Plant."

For almost forty-five years Dr. Ittner has been in charge of research at Colgate-Palmolive-Peet Company or predecessor companies. Among Dr. Ittner's many contributions is his development of a successful commercial process for the hydrogenation of fatty oils, on which process he has been granted a number of patents. He has also made valuable contributions in the field of distillation and he holds several recent patents pertaining to new processes for glycerine production, and fatty acid distillation. He holds patents for the counter-current hydrolysis of fats with water to fatty acids and glycerine.

New Fellowships at Columbia University Established

Two fellowships have been established through the bequest of the late William Campbell, for many years professor of metallurgy at Columbia University. The William Campbell fellowships will be awarded for graduate study and research in metallurgy. Applications should be accompanied by academic records and proposed research projects, and must be filed with the Secretary of the University before March first. Graduate study or practical experience in metallurgy is desirable. Information may be obtained from Eric R. Jette, School of Mines, Columbia University, New York.

Selective Service System Requests Deferment of Students in Specialized Fields

Lewis B. Hershey, director of the Selective Service System, sent the following memorandum to state directors on January twelfth:

"The attention of local boards is again invited to the necessity of seriously considering for deferment students in certain specialized professional fields in which dangerously low levels of manpower are found to exist . . . .

"Subsequent to the declaration of war, local selective service agencies have in many instances proceeded to classify registrants without regard to the fact that they are in training or preparation for activities, the maintenance of which is essential to the national health, safety, or interest, and war production. This is particularly true in cases of engineering, chemical physics, medical, and dental students . . . War industries are undergoing a hitherto unknown expansion. Aeronautical, civil, electrical, chemical, mining, metallurgical, mechanical, and radio engineers, together with physicists and chemists are essential to ensure a sufficient flow of material for the armed forces, and industry must look to the engineering, chemical, and physics students now in training to meet its present and future requirements.

"It is equally important that instructors in these fields be seriously considered for occupational deferment. Shortages of qualified instructors are known to exist.

"Local boards will be informed when the manpower requirements necessary to the national health, safety, or interest, and war production become static. Until such time the policy set forth in the Memoranda to All State Directors 1-62, 1-91, 1-99, and 1-50 remains in force."

Boston Notes

By **William J. O'Brien, F.A.I.C.**

Upon attending a gathering of the American Chemical Society one cannot fail to be impressed with the genuiness of the proceedings. Meetings always start on time and most certainly accomplish their objectives. As principal speaker at the meeting of the Northeastern Section held in Huntington Hall of the Massachusetts Institute of Technology, on December eleventh, William Lloyd Evans, president of the American Chemical Society, stressed the need for concentration on normal essential activities by the younger element among chemists, and further said much to encourage clear thinking by all as a requisite for victory. The speaker's friendly personality captivated the attention of all and despite the expansive character of Huntington Hall, excellent quality of voice and tones made details of the talk easily heard. Clearly lettered slides accompanied the address, relieving much of the difficulty encountered when the sugars are studied intensively. The speaker was revealed as an inspiring teacher as well as enthusiastic chemist. While the lecture has been heard in other cities during Dr. Evans' tour of the country, it is thought that an article in one of the journals, presenting the solid facts of the talk, would be welcomed by many.

At the December sixteenth meeting of the Boston Microchemical Society held in the Mallinckrodt Chemical Laboratory of Harvard, a part of the proceedings was devoted to open discussion on the course of activities to be followed by the society during the present war period. General sentiment expressed by the members was greatly in favor of actively carrying on the affairs of the society, to some extent in emulation of the course which has been followed by many societies in the beleagured countries in the last years. As speaker of the evening, Professor Bertram E. Warren of the Department of Physics, Massachusetts Institute of Technology, explained the fundamentals of the technique of X-ray Analysis, using blackboard outlines and numerous excellent slides, and presenting the subject in a manner that was precise, pleasant and very instructive. The Microchemical Society will hold its annual meeting in this hall on January 13, 1942.

A symposium on "Viscosity, Molecular Size and Molecular Shape" will be held under the sponsorship of the Society of Rheology at the Brooklyn Polytechnic Institute on February twentieth. Speakers will be M. L. Huggins, Eastman Kodak Research Department, Buffalo, New York, on "Theoretical Fundamentals concerning the Connection between Viscosity, Molecular Size and Molecular Shape," and M. A. Lauffer, the Rockefeller Institute for Medical Research, Princeton, N. J. on "Experimental Methods and Facts."

The American Society of Brewing Chemists announce that the *Proceedings of the Fourth Annual Meeting* of the American Society of Brewing Chemists, held in Chicago, May 15-17, 1941, have been published. The *Proceedings* contain all papers and reports submitted at the technical sessions of the meeting, including discussions. A limited number of copies are available from the office of the Executive Secretary, 64 East Lake Street, Room 840, Chicago, Illinois, at a price of $3.00.

Gustavus J. Esselen, F.A.I.C. has been appointed to membership on the Massachusetts State Board of Registration of Professional Engineers.

Dr. Gustav Egloff, F.A.I.C., spoke at the December meeting of the Peoria section of the American Chemical Society, held in the auditorium of the Northern Regional Research Laboratory of the Department of Agriculture. His topic was "Petroleum in the National Defense."

Ed. F. Degering, F.A.I.C., addressed the student affiliate of the American Chemical Society at Butler University on November twenty-eighth. His subject was "Synthetics: Fibers, Plastics, Rubber."

Ivor Griffith, F.A.I.C., formerly chief chemist of John B. Stetson Company, Philadelphia, is now president and research director of the Philadelphia College of Pharmacy and Science.

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U. S. Civil Service Commission Announcements

The Government needs scientists, and the Civil Service Commission has reannounced to all those in the chemical field the following Civil Service examinations.

PHYSICS: $2,600 to $5,600 a year. In this field there is great demand for physicists well qualified in stress analysis, ballistics, elasticity, vibration studies, vacuum-tube circuits, and short radio waves. Provision is made in the new announcement for accepting applications for the assistant grade positions ($2,600 a year) from applicants who wish to qualify on college teaching unaccompanied by research.

CHEMICAL ENGINEERING: $2,600 to $5,600 a year.

For this field the Commission has adequate employment lists in some branches. However, there is a shortage of qualified people in plant layout, equipment design, market analysis, chemical economics, heavy chemicals, plastics, rubber, agricultural by-products, and strategic minerals. Applicants may now substitute college teaching in chemical engineering or chemistry for part of the prescribed experience.

EXPLOSIVES: Over 100 chemists are needed. $2,600 to $5,600 a year.

In this examination the term "explosives chemistry" is interpreted to mean "research, developmental or production work on explosives, or materials which require for their preparation and handling, methods, techniques, and precautionary measures similar to those used for explosives". There is no

longer a "recency" clause in this announcement, and an applicant's experience may therefore have been gained at any time.

In the new Physicist and Chemical Engineer examinations the recency requirements relative to experience have been modified. Although preference in certification will be given to those eligibles who acquired at least one year of their required education or experience within the ten years immediately preceding the filing of their applications, those whose qualifying education or experience was gained previous to that ten year period may be certified and appointed.

For all of these examinations the age limit has been raised to sixty years, for regular probational appointment. Provision is also made for the waiver of age and physical requirements for temporary positions connected with the defense program.

ANALYSIS AND RESEARCH: $2,600 to $5,600 a year. (Announcement 185.)

Any specialized branch of chemistry is included. Analytical chemists at $2,600 to $3,200 are needed for chemical testing of materials, for compliance with specifications, checking health hazards by chemical methods and other analytical chemistry work.

PHARMACOLOGY AND TOXICOLOGY: $2,600 to $4,600 a year. (Announcement 186).

An important change has been made pertaining to college teaching: Provided all other requirements have been met, college teaching will be considered acceptable for any grade of the Research Chemist examination or the Pharmacologist or Toxicologist examination, when accompanied by a reasonable amount of scientific research in the appropriate field—chemistry, or pharmacology or toxicology.

In both examinations, responsible professional experience must be shown, except for the partial substitution of graduate study.

Another change pertains to the recency of education and experience in the Chemist examinations: All persons otherwise qualified may now apply, but those eligibles will be considered first who show that part of their education and experience has been acquired within the past ten years.

Applicants must not have passed their sixtieth birthday, unless they are entitled to military preference, in which case they must be under the retirement age. Non-veterans over sixty, otherwise qualified, may apply and their names may be listed for possible use to meet defense needs which can not be met by other means.

All examinations are open until further notice, but persons who are qualified should apply at once. (Persons rated eligible under the 1941 examinations—Nos. 25 and 58—need not apply again, for their eligibility will continue under the new examinations). The announcements of the new examinations giving further information may be obtained, with the application forms, from the Secretary, Board of United States Civil Service Examiners at any first- or second-class post office or from the Civil Service Commission, Washington, D. C.

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Appendix

A. Symbols Commonly Used in Engineering Reports
B. Conventions
C. References

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JANUARY, 1941 VOL. XVIII, No. 1

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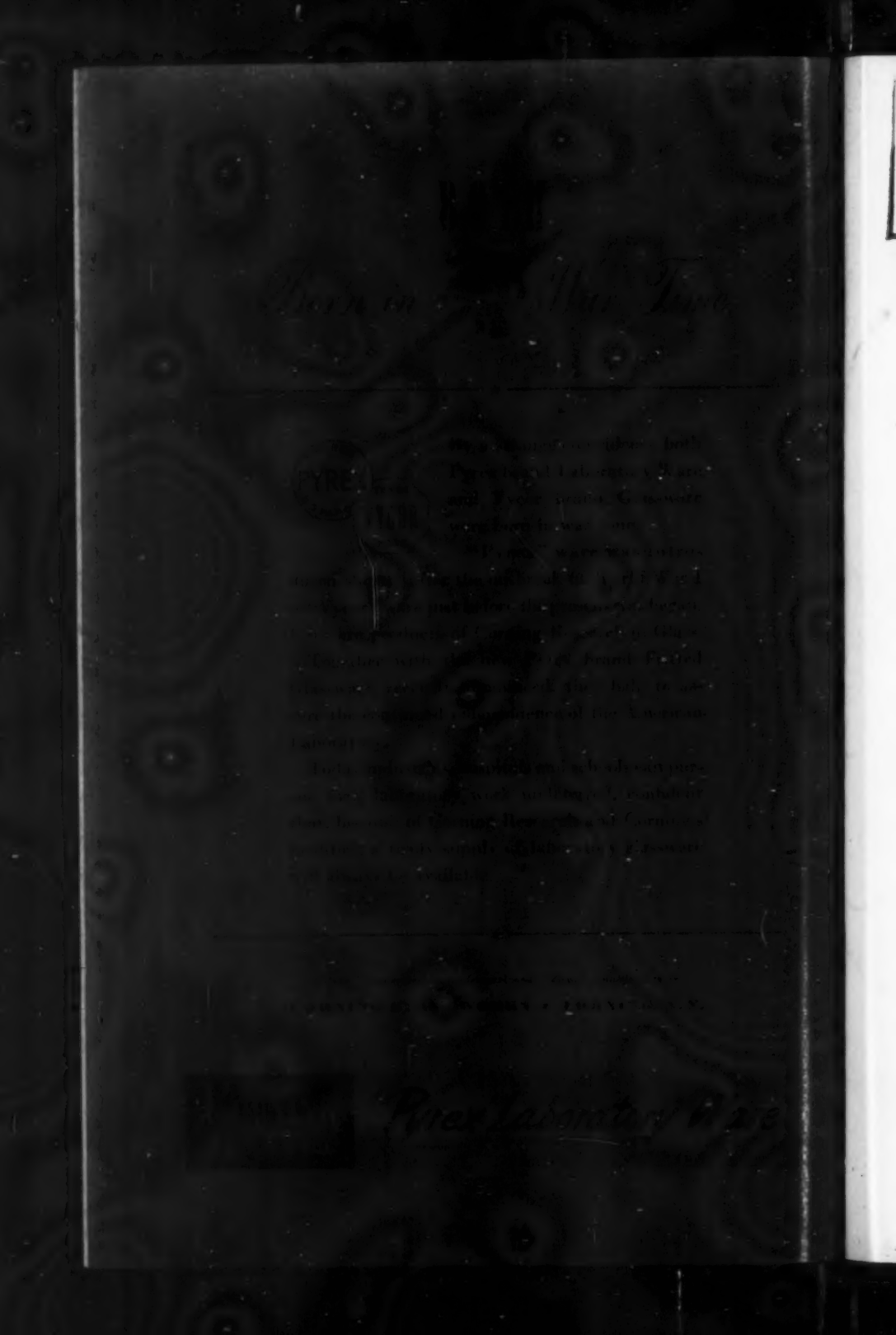

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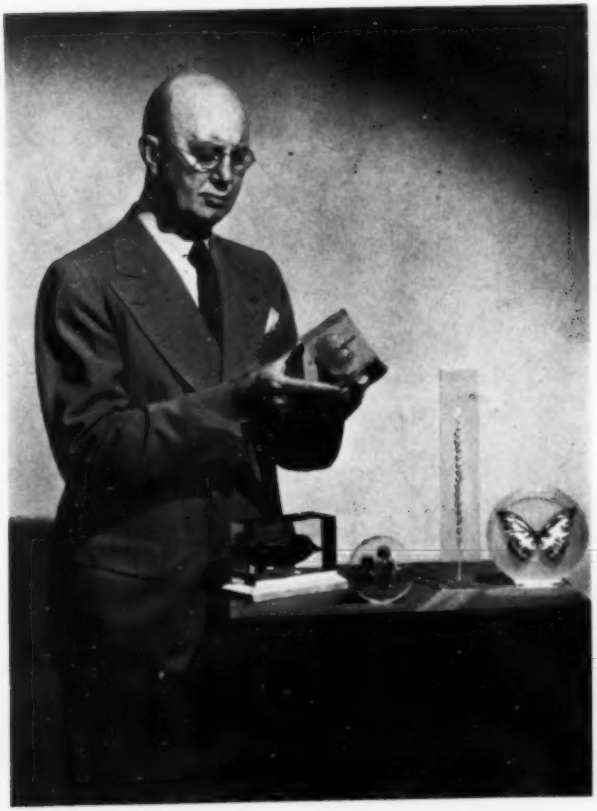

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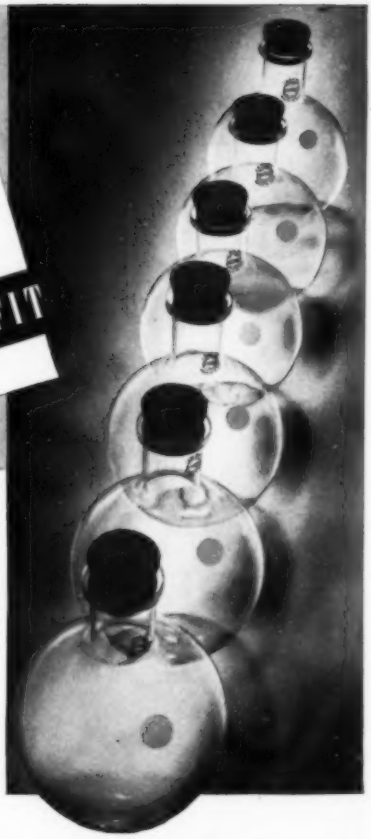

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ANNUAL MEETING REPORTS

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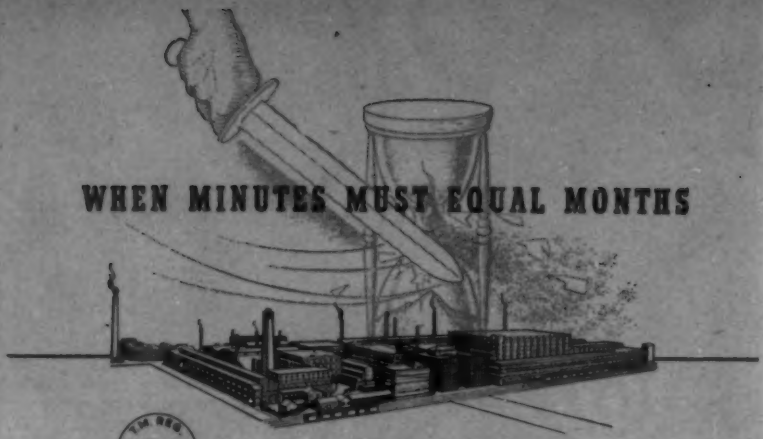
NATIONAL DEFENSE AND THE TRAINING OF CHEMISTS



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In these critical times our Nation's laboratories work at a new tempo. For America is matching days against a decade. Time is vital.

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AMERICAN INSTITUTE OF CHEMISTS

VOLUME XVIII, NO. 9

LENGTHENING THE LINE AT BOTH ENDS

2 New Sizes in PYREX BRAND PETRI DISHES

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WE added to the line to add to your greater convenience. Two new sizes of Pyrex brand Petri Dishes are now available — 60 mm. x 15 mm. and 150 mm. x 20 mm. Fabricated from Pyrex brand Chemical Glass—"Balanced" properties, providing high chemical stability and greater resistance against thermal and mechanical shock, are combined for over-all economy. All five sizes offer excellent transparency and will not cloud after repeated sterilization (steam or hot air). Tops and bottoms are interchangeable. Beaded edges prevent chipping.

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CORNING *means* Research in Glass

Pyrex Laboratory Ware
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